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WEST EUROPE REPORT SCIENCE AND TECHNOLOGY

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CONTENTS

ELECTRONICS

Activities, Plans of Artificial-Intelligence Company Reviewed (ELECTRONIQUE INDUSTRIELLE, Nov 82).....	1
French Electronics Industry Mobilization Plan Outlined (Robert Clarke; LE MATIN, 22 Jan 83).....	4
First French Speech-Synthesizer IC on Market (F. Grosvalet; ELECTRONIQUE ACTUALITES, 4 Feb 83).....	6
Philips Lab Develops 5 cm Magneto-Optical Disk (ELECTRONIQUE ACTUALITES, 11 Feb 83).....	8
Development Plan for CII-HB Summarized (ZERO UN INFORMATIQUE HEBDO, 14 Feb 83).....	10
Briefs	
H-MOS II Technology	14
Funds for Nationalized Electronics	14

INDUSTRIAL TECHNOLOGY

Committee Formed on 'Automation of Continuous Processes' (ELECTRONIQUE ACTUALITES, 18 Feb 83).....	15
Strategy Proposed for EEC Machine Tool Industry (ELECTRONIQUE ACTUALITIES, 18 Feb 83).....	17
Briefs	
ASEA in France, Japan	19
Good Year for SAAB-SCANIA	19

Plasma Coal Gasification	19
EEC Against Machine Tool Plan	20

TRANSPORTATION

Bad Times See Observers Still Speculating on A-320 Launch	
(Philippe Gazier; LE NOUVEL ECONOMISTE, 7 Feb 83).....	21
Airbus Attempts To Penetrate Japanese Market	
(R.-P. Paringaux; LE MONDE, 10 Mar 83).....	24
Industrial Technology 'Sacilor' Steel Company Operating Contract Signed	
(AUTO-INDUSTRIES, 24 Feb 83).....	26
Briefs	
Joint Peugeot-Fiat Engine	27

ELECTRONICS

ACTIVITIES, PLANS OF ARTIFICIAL-INTELLIGENCE COMPANY REVIEWED

Paris ELECTRONIQUE INDUSTRIELLE in French Nov 82 pp 12, 14

[Article by P. I.]

[Text] Created in August 1982 by a core of researchers from IMAG's (Information Technology and Applied Mathematics of Grenoble) Artificial Intelligence and Robotics team, and from INPG (National Polytechnic Institute of Grenoble), ITMI (Industry and Technology for Intelligent Machines) is currently the first French company to produce and distribute advanced software for robotics and artificial intelligence.

ITMI's goal is to provide large scale distribution of computerized robots in enterprises of all sizes, meaning robots endowed with the ability to perceive--such as three-dimensional vision--and with an advanced task description language.

Until now, robotics developments have essentially occurred in the mechanical industry and in the numerical control of machine-tools, and companies selling robotics components have in general made very little use of the possibilities offered by recent developments in information technology. At present, only a small number of large enterprises are making use of advanced robots.

To reach its goal, ITMI's areas of activity will pivot around three specialized sectors: robot programming, computerized vision, and specialized systems and artificial intelligence; as well as around three types of services: training, consulting, and studies and production of industrial prototypes and product sales.

Robot Programming

In this area, ITMI's activity will concern the design, implementation, and distribution of advanced programming languages, and particularly of the LM language developed at IMAG in cooperation with several industrial users. This language, which we might remember was selected for the ARA (Advanced Robotics and Automation) project, is presently the topic of discussions between ITMI and a large robot manufacturer who might buy an export license and thus offer

it on a number of its products. In addition, ITMI should develop tools for graphic simulation and interfacing with CAD systems, which will also make use of these languages. The company is already planning to study robotized assembly stations equipped with these tools, for several manufacturers.

Computerized Vision

To be easily operated and perform more complex tasks, robots require the addition of advanced perception capabilities. And while vision offers numerous application possibilities (parts feed systems, quality control and inspection, and so on), it nevertheless raises significant technical problems, mostly due to the amount of information to be processed, and most of the systems available on the market depend on a process simplification which imposes utilization conditions that are difficult and costly to satisfy.

In this area, ITMI will rely on new methods developed by IMAG researchers and made usable by the progress in information technology, to distribute in particular, a three-dimensional vision system based on a camera and a laser for inspection and weld tracking, and a system to identify and localize partially hidden objects through the interpretation of images with several levels light intensity. Beginning in 1984, ITMI plans to distribute complete products, namely robots + programming languages + vision systems.

Specialized Systems and Artificial Intelligence

As a new discipline in information technology, whose objective is to endow computers with reasoning capabilities, artificial intelligence has already led to results that could be industrially developed. A particularly promising application is that of specialized systems, an area in which the IMAG team has already worked, notably in CAD and the generation of machining processes. However, ITMI's activity in this domain will at first be focused on training and the production of prototypes.

Three Products

ITMI already sells various products, particularly the LM language and a three-dimensional vision system with basic software.

LM Language--Designed to program handling robots, LM makes it possible to describe handling tasks in terms of displacements, operations of tools mounted on manipulator arms, and data received from sensors (vision, force, touch). The language interpreter manages a model of the robot's environment, changes specific coordinates of the robot's mechanical structure, and coordinates several parallel processes (monitoring the condition of a sensor during a displacement, for instance). In addition to allowing the use of very sophisticated sensors, LM is compatible with several minicomputers (it has already been used on several robots), and its field of application includes assembly, arc welding, and machine loading/unloading.

V3D--A system of three-dimensional vision, the V3D sensor is composed of a camera and a laser. The latter is used to produce a light plane which intersects objects along a lighted line. The line is seen by a camera and transformed into a digitalized image. A triangulation process yields the space coordinates of the lighted points. Associated with this sensor is a basic software which includes calibration of the sensor and extraction of three-dimensional coordinates. In fact, the software will soon be complemented with shape-recognition protocols. We might point out that V3D is designed for volumetric inspection, weld tracking, and object location.

PVV--To be marketed next year, PVV is a complete picture analysis system. For reasons of efficiency, most of the industrial systems for picture analysis work with so-called binary images, that is, those which have only two levels of light intensity--0 (white) and 1 (black)--and their implementation is delicate as a result of their principle (problems of lighting, contrast, and so on). ITMI's objective with this system is to eliminate the drawbacks of binary systems. Indeed, the system operates on images with several levels of light intensity (typically 16 to 256) and extracts the contours of objects by calculating light contrast. Its efficiency depends on the use of a hard-wired operator to calculate contrast, and on an artificial intelligence strategy for pertinent portions of images, such that the system is able to identify and locate partially hidden objects.

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ELECTRONICS

FRENCH ELECTRONICS INDUSTRY MOBILIZATION PLAN OUTLINED

Paris LE MATIN in French 22 Jan 83 p 9

[Article by Robert Clarke: "A French Super-Computer"]

[Text] Mobilization has begun: more than 8 billion francs will be spent in 1983 to perfect original products and to launch French electronics on a path that should bring it to third place in the world, after the United States and Japan. Jean-Pierre Chevenement, minister of research and industry, presided over the first session of the national committee that will follow the development, considered to be a matter of first priority, of this electronic subsidiary.

Following the recommendations of the report written by a group of experts at the initiative of Abel Farnoux, the government has decided to set aside 140 billion francs over a 5-year period to meet the world challenge in this field, and to launch a bold strategy aiming to place French electronics among the top-ranking industrialized nations. The national committee, responsible for following this priority program under the presidency of Jean-Pierre Chevenement, made the decision to focus the effort on several essential areas.

The first area includes basic electronics elements, or components, which France is still too dependent upon in foreign markets (see yesterday's LE MATIN). The agreement integrating the Eurotechnical society with the Thomson group will be one way to implement this policy. A common research pole will be established through the cooperation of researchers of the various laboratories concerned.

Eight large national projects were retained out of the 14 proposed by Abel Farnoux in his report. They are concerned with advanced technologies of the future, such as computer-aided design and teaching, automatic translation, perfecting of original elements for mini-computers, computerized image techniques. The six projects now being evaluated might be launched in the next few months.

It was decided to launch the study for a high-power French computer, like those now found only in the United States. The military has been impatiently asking for this super-computer, and will contribute heavily to its financing. However,

it will also be very useful to public and private firms and its development will permit the advancement of a technology that has been neglected in France so far.

An offensive will be launched in data processing for the general public by concentrating funds on Thomson equipment. The new products have not been defined as yet, but they might range from video tape recorder to new "digitized" television equipment with a higher performance than those now existing, and are easier to attach to portable cameras and to other miniaturized elements.

Finally, a new high-performance scientific computer, the "SM-90," will be industrialized and quickly launched on the world market. It is patterned after a prototype created by researchers of the Telecommunications Research Center.

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ELECTRONICS

FIRST FRENCH SPEECH-SYNTHESIZER IC ON MARKET

Paris ELECTRONIQUE ACTUALITES in French 4 Feb 83 pp 1, 12

[Article by F. Grosvalet]

[Text] SCAIB (Commercial Company for the Industrial Application of Patents) has just started the exclusive marketing of CNET's (National Center for Telecommunications Studies) integrated speech synthesizer, ZHW 186, which was already known under its developmental names SPI or SDP. The circuit, which was designed and perfected up to mask fabrication by CNET at Lannion, is diffused by Motorola at its East Kilbride plant (the American company acts as a silicon foundry). It is encapsulated and tested at Lannion.

The French company SCAIB, which among others, distributes Motorola's components, participated in the production of this circuit by financing mask fabrication, receiving in return the exclusive right to sell the ZHW 186 (it is supposed to have already sold 2000 of them).

CNET's speech synthesizer, which does not function unaided (a minimum system, in addition to associated circuits specific to the ZHW 186, requires an 8-bit single-chip microcomputer, a programmed ROM which can be as large as 56 KB, and a 12-bit digital-analog converter), is sold at 94 F each in quantities of one, and 66 F each in quantities larger than 100.

The ZWH 186 is fabricatated in NMOS technology; it incorporates some 10,000 MOS transistors on a 25 sq-mm chip. Offered in a 24-pin DIL package, it operates at 5 V and consumes 200 mW. It was thus developed under the SPI nomenclature by CNET Lannion more than two years ago. It was initially to have been manufactured by Thomson-EFCIS, but its production was ultimately subcontracted to Motorola because the lead times quoted by EFCIS were deemed too long by CNET. Moreover, the American company could in the future, become a second source for this speech synthesizer or for other generations that could be integrated on a larger scale or use different coding techniques, and which are still under development at Lannion. Negotiations in this respect have been started between CNET and Motorola.

A 10-Cell Filter Lattice

As most speech synthesizers currently on the market, the ZWH 186 uses a linear prediction coding (LPC) technique; it is entirely digital. Its output is a digital voice signal linearly coded over two-complement 15-bits, sampled at the rate of 1.3 Mbits/s (one 16-bit word every 125 microseconds, with a 6.4 MHz quartz oscillator). This output is derived from input data (frame of 13 six-bit words) rescanned at a variable frame rate depending on applications and analysis techniques (10-30 ms typically).

The ZWH 186 consists of two major portions: an excitation generator (equivalent to the combination of glottis and vocal chords), and a linear prediction filter (equivalent to the voice tract), to which have to be added parameter memories, gain control, and a time base. It incorporates frame registers containing 10 LPC, amplitude, and excitation frequency coefficients. The latter can be achieved internally or externally; this possibility, together with that of asynchronous transfers at the excitation frequency, allows the production of very high quality sounds. The lattice filter is composed of ten identical cells operating with a 10 microsecond cycle, and includes a 15-bit series adder, a 16-bit series subtractor, and two series-parallel 16-bit by 6-bit multipliers.

Additionally, the ZWH 186 is characterized by easy interfacing, which nevertheless requires several logic circuits of the 74 LS family, with most 8-bit microprocessors or single-chip microcomputers (the time used by the microprocessor for synthesis is less than 1 percent). Transfers to the processor are entirely asynchronous. The transfer speed is not fixed; it may be selected in any way, and in fact depends on the quality of the speech and the compression of memorized parameters.

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ELECTRONICS

PHILIPS LAB DEVELOPS 5 CM MAGNETO-OPTICAL DISK

Paris ELECTRONIQUE ACTUALITES in French 11 Feb 83 p 15

[Article by JPF]

[Text] Philips' German research laboratories have just produced a model for an information storage system that uses a laser and magneto-optical technology. Ten megabytes of data, corresponding to 5000 pages of information can be stored on a 5 cm magneto-optical disk. The device allows repeated selective or total erasure of data.

Compared to 13 cm floppy disks for instance, this magneto-optical disk stores 10 to 100 more information on an area that is six times smaller. The actual device is 3-4 times more compact than floppy disks systems, which immediately makes them suitable for portable computers.

According to Philips, this system, when available in two years, will not cost more than a current floppy disk system. Disk prices would also be similar to the prices of floppy disks.

In the opinion of its designers, this unit is directly intended for personal computers such as text processors, which generally do not need very large data storage capacities. The system could eventually be used in special minicomputers for television games.

Technology

Philips' magneto-optical disk does not differ in principle from the Xerox or the Japanese NHK and Sharp systems, but its shape is different. Disks are recorded and erased by means of a thermomagnetic method, and read by means of magneto-optical phenomena.

During recording, a small area of the disk is hit by a laser beam which heats the impact point to a temperature of the order of 100 degrees Centigrade, close to the Curie point of its rare-earth magnetic material (gadolinium). The heated point is then subjected to an oriented magnetic field which is

retained upon cooling to determine the information bit. The same area can subsequently receive another information bit by laser reheating and magnetic polarization in the opposite direction. The same technique is used for erasing.

Reading is performed by means of a laser optical device. Laser light reflected from the disk's magnetized areas undergoes a rotation of its polarization plane, depending on the direction of the magnetization. The detected rotation is an image of the direction of the magnetic field, and thus of the stored information, 0 or 1 (a phenomenon known as the Kerr effect).

Rare Earth Alloy

For the disk, the Philips laboratory tested several alloys based on rare earths, among which gadolinium.

The magnetic alloy is deposited in the form of an amorphous film 500 Angstroms thick, on a plastic transparent substrate in the final shape of the disk. The combination is then covered with a protective plastic layer. The final thickness is 3 mm.

Magnetic film alloys were originally developed by IBM, which used them to manufacture bubble memories; but the magnetic domains on a disk were unstable. The Japanese company Togami, which continued IBM's work, encountered the same difficulties, but did develop a film composed of two 0.1 micron layers each, which together produced stable domains for reversible magnetization. The Philips disk, composed of these materials, is engraved with grooves that are 0.5 microns thick by 5 micron wide; the grooves are spaced 10 microns apart. The laser light beam is projected into the groove through the coil of a small electromagnet with a power of 3 mW.

The domains produced by the laser are ellipsoidal in shape, and 2 x 5 microns in size; 3 microns are sufficient to produce a domain and write a bit. An array of four photodiodes, using the interference created by the laser reflection from the groove walls, guides the magneto-optical head over the grooves.

During reading, the magnetic domains are illuminated with a laser whose beam is linearly polarized. A polarizer in the form of a sheet placed behind the disk determines the direction of polarization. The photodiodes detect one of the directions of polarization of the reflected light as a logical 1, and the other direction as a 0.

The photodiodes used to guide the magneto-optical head are also used for data reading. Their reading speed is of the order of 250 Kbits per second. Access time to this memory is 50 ms for a speed of 10 rpm, which is 6-10 times faster than that of floppy disks.

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ELECTRONICS

DEVELOPMENT PLAN FOR CII-HB SUMMARIZED

Paris ZERO UN INFORMATIQUE HEBDO in French 14 Feb 83 p 9

[Unsigned article]

[Text] As expected, the Compagnie des Machines Bull (CMB) will receive 1.5 billion francs from the government in 1983, in the form of a plan contract. In turn, Thomson will receive 1.6 billion, as well as a cancellation of penalties for failing to meet deadlines on its government contracts, which amount to about 400 million francs. This was officially announced last Wednesday by Jean-Pierre Chevenement to AJEF (Association of Economic and Financial Journalists), while discussing the distribution of the total 20.2 billion francs budget allocated to plan contracts for this year (50 billion by the end of 1985). On Thursday 10 February, he signed the plan contract for CMB. Will this funds enable CII-HB to achieve its two major self-imposed objectives: grow by 17 percent per year, and reach a turnover of 15 billion francs in 1986 (except for Sems)? Below are some extracts from a document presenting the 1983-1986 enterprise plan of CII-HB.

Five Plans of Action

1. Quality: Strategic Priority

The quality of products and services is a determining element in a customers' selection. In the face of competition we must be among the leaders, whether in machine quality, maintenance, services offered, reliability of promises, or relations between the group and the public in general.

A quality improvement program based on sensitizing all areas of activity to respect quality, and on developing appropriate training, is being implemented.

Its performance and first results will be carefully monitored by the group's general directorate, but customer satisfaction depends on the daily behavior of each one of us.

2. Cooperation: Policy of Systematic Openness

Our strategy implies a concentration of our efforts. We must therefore seek technical and commercial cooperation agreements with our French partners.

In some cases, we will complete our international alliances to strengthen our group throughout the world.

These agreements will allow us to limit our research investments, benefit from technical agreements, and complement our product lines.

Consequently:

The technical and commercial agreement with HIS is a key element in our strategy;

Evident synergies exist in components (VLSI) with French and even foreign manufacturers (two-source policy), as well as in telecommunications;

Agreements will systematically be sought in Europe (research, OEM agreements, and so on);

The development of the office automation and minicomputer sectors can involve agreements with French and foreign partners;

The group, which has an excellent world commercial network, will be able to sell complementary products created by its partners in the French electronic industry;

The group will develop a dialog with public research agencies and universities, notably for new technologies, CAD, VLSI, office automation, software engineering, and specialized systems.

3. World Orientation: Competition, Source of Dynamism

It is important that we take best advantage of our world commercial network by devoting priority to some difficult but strategic markets.

By being competitive with the best American and Japanese companies, we will help recover the balance of trade in the electronics sector. That is why we want to:

Develop our presence on some markets, such as the United States, as part of our cooperation with Honeywell;

Seek international agreements, notably by participating in the creation of computer industries in countries that have none (such as is being done in Brazil).

4. Structures: Centers of Responsibility

The group's overall strategy is formulated by the parent company, CME, which assures the coherence of its implementation, and makes sure that the efforts of each unit contribute to the success of the whole. Thus were created a directorate for strategy and planning, a directorate for research and technologies, and a directorate for networks and communications, which assure technical coherence. The general directorate will have an accurate master chart which will allow it to measure in real time the progress of each subsidiary and each product line.

Specialized subsidiaries will be gradually formed to meet two priority objectives: identify and delegate responsibilities, and adapt to market diversity, perspectives, and problems. Within the general plan and allocated budget, they will be fully responsible for their own development and economic results. They will also have available to them management methods and procedures designed to better utilize management by profit centers and product lines.

This organization must balance the advantages of strong decentralization with membership in a strong and coherent whole. Its proper operation depends on the mobilization of all efforts and on the elimination of internal divisiveness through computerization and training.

5. Human Resources: Training and Dialog

Employment and Development

For the next two years, the group's employment should remain stable.

Orientations outlined elsewhere will result in the evolution of computer occupations, particularly in services, and in a rebalancing of various sectors.

The importance of professional training will be bolstered by the contribution it is expected to make to internal mobility.

The training policy, which will involve the participation of personnel representatives, will meet these requirements.

Relations Within the Group

Knowledge of the enterprise plan is a privileged opportunity to establish with the personnel, its representatives, and its supervisors, an exchange that represents a significant stage in improved social dialog within the group.

The simultaneous implementation of new legal provisions should generate a more efficient and motivating mode of relations.

Priorities in coming months will be:

The employees' right of expression about the content, organization, and improvement of their working conditions, and the pursuit of solutions within their units;

The role of supervisors, based on competence of course, but also on an awareness of the human dimensions of problems and on abilities to lead;

Adaptation to the measures taken to develop personnel representation institutions: exercise of union rights, operation of various established committees, centrals, group committees;

Generalized use of contractual practices, encouraged by the new laws;

Implementation of an information/communication plan, aimed at creating an identity and understanding of the group beyond the personality of each subsidiary.

11,023

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ELECTRONICS

BRIEFS

H-MOS II TECHNOLOGY--Since this summer, Thomson-Efcis has achieved an H-MOS II technology, and is now preparing to begin production. This project, started two years ago, has succeeded thanks to the acquisition of new tools (direct wafer stepper and plasma etch), and to the implementation of new design facilities. We should point out here that this is a proprietary Thomson-Efcis technology. This technology (characterized by 2 micron lines--compared to 5 micron for H-MOS I--and by a poly-silicon grid), makes it possible to at least double the operating frequency of circuits. Three test circuits have been designed with this technology, in particular the 68000 H-MOS II. Its area, which is normally 48 sq-mm (in H-MOS I), drops to 27 sq-mm in H-MOS II. Functionally good components have already been obtained, but production still remains to be achieved with acceptable manufacturing yields, which is yet another stage. [Text] [Paris MINIS ET MICROS in French 15 Nov 82 p 26] 11,023

FUNDS FOR NATIONALIZED ELECTRONICS--During last Wednesday's session, the Council of Ministers examined the plan contracts that are to be signed between the state and nationalized industrial groups. These contracts will define the objectives on which these groups will work as part of their self-management, as well as the state's responsibilities as shareholder. As we know, the government will spend 20 billion francs to finance these investment programs during 1983. As part of this total expenditure representing budget allocations (12.45 billion francs) and participating loans (issuance of titles, conversion of obligations, and so on) for plan contracts, the portion allocated to the electronics industry amounts to 4 billion francs. Of these funds, 0.87 billion are earmarked for CGE, 1.5 billion for CII-HB, and 1.6 billion for Thomson, indicated Mr Chevenement to the Association of Economic and Financial Journalists. [Text] [Paris ELECTRONIQUE ACTUALITES in French 11 Feb 83 p 1] 11,023

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INDUSTRIAL TECHNOLOGY

COMMITTEE FORMED ON 'AUTOMATION OF CONTINUOUS PROCESSES'

Paris ELECTRONIQUE ACTUALITES in French 18 Feb 83 p 4

[Article by P.I.: "Committee for 'Automation of Continuous Processes' Formed"]

[Text] Following up on the bid tendered jointly by the Scientific and Technical Mission of the Ministry of Research and Industry (MRI) and the Data Processing Agency (ADI), reported on in ELECTRONIQUE ACTUALITES dated last 28 January, the government has just created a committee for "Automation of Continuous Processes."

Earlier abandoned in favor of robotics and discontinuous processes, continuous processes are now the beneficiaries of a specific effort launched by the government in the framework of the "Productique" mission.

After the bid tendered jointly by the Ministry of Research and Industry and the Data Processing Agency, the government has just created a committee on "Automation of Continuous Processes" that includes scientists, industry representatives, users and representatives of the government.

Created for a duration of 3 years, the first mission of this committee will be to follow up bid tenders, for which the budget provides an amount of Fr. 6 million. While this sum, which is only an estimate, seems small compared to what is allotted for other efforts of this type, it should be recalled that between 1980 and 1982, the number of efforts undertaken in the area of continuous processes was 18 for a total subsidy of Fr. 4.5 million. In addition, in the "automatic" field, continuous processes currently represent over 60 percent of offers.

Be that as it may, this "voluntary" effort has the merit of trying to associate supply and demand in an area where much remains to be done even if currently this sector of activity still remains largely an exporting sector and the responses (expected) from engineering firms can only contribute to accentuate the impact of the effort undertaken.

However, bid tenders constitutes only a portion of the activities of the committee that has just been created. Created to carry out a much more general effort, the mission of this committee will be to reflect on the needs in the area of continuous processes and on efforts to be undertaken, efforts for which it will assure not only the follow up of dossiers but also the follow up of dissemination of research.

From now on, three broad themes of reflection are apparent: the first concerns optimization and managing the monitoring of production units, the second tends to improve man/machine interaction particularly in following up breakdowns, reliability, safety in operation and decision making help. Finally, the third theme concerns research which should make it possible to find solutions along conservation lines (conservation of raw material, energy) while maintaining a high value added.

But the main purpose of these various themes of reflection is to change attitudes as to the way of designing automation of processes. In fact, until the present, the automation specialist took a back seat and appeared as a "spare tire" to solve the various problems that could arise "one by one." To this segmented approach should be substituted a total approach to problems by associating, from the design stage on, process people and automation specialists. A difficult task if there ever was one, but which is imperative today if one wants to produce competitive systems that meet the needs of industry.

9969

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INDUSTRIAL TECHNOLOGY

STRATEGY PROPOSED FOR EEC MACHINE TOOL INDUSTRY

Paris ELECTRONIQUE ACTUALITIES in French 18 Feb 83 p 3

[Article: "CEE Proposals to Support Machine Tools"]

[Text] The European Commission is proposing to the Ten [Common Market nations] a resolutely aggressive strategy to maintain the Community machine tool industry in the front ranks in the world. The sector represents some 2,800 companies. This would counterbalance the Japanese offensive on numerically controlled machines.

In a report to the Council of Ministers, the Commission stresses that Japanese machine tool exports have increased on an average of 37 percent annually between 1976 and 1980. The EEC share in world machine tool production has fallen off by 35 to 33 percent with the Community retaining its advantage in the field of mechanical machine tools.

In a period of 4 years, Japan, which has concentrated its efforts on machines integrating electronic innovations, has become the second world producer of numerically controlled machines. Its share of the market has gone from 13 to 30 percent to the detriment of the EEC, whose share has dropped from 41 to 35 percent, and especially of the United States, whose share has dropped from 38 to 24 percent.

The Japanese offensive has been particularly concentrated on numerically controlled lathes and manufacturing centers which represented 60 percent of Japanese exports of numerically controlled machines in 1980. On the other hand, Japan has succeeded in slowing down foreign penetration, which dropped from 15 percent to 6 percent between 1971 and 1981.

To compete with the Japanese who, according to the Commission, have been the beneficiaries of government policy of intervention in the promotion of supply and demand, the Community industry should increase its competitiveness by taking better advantage of the Community dimension of the market and by rationalizing its own structures.

The European machine tool sector is to be the beneficiary of a policy of relaunching investment which should be specifically reflected by better access to the financing instruments of the EEC. Since European industry is basically composed of small and medium sized firms, according to the Commission, coordination or specialization among companies should also be encouraged.

The Commission is also proposing to stimulate the distribution of advanced technologies and electronics and to promote the creation of standards and "interfaces" at the Community level.

The document, in fact, thinks it is necessary to quickly adapt production to demand and is proposing to grant support of 1.2 million ECU [European Currency Units] to support the prospecting efforts of the Community market being carried out by industry. According to industry estimates, consumption of numerically controlled machine tools, which is currently 12,000 annually, should increase to 100,000 in the next 5 years.

9969

CSO: 3698/250

BRIEFS

ASEA IN FRANCE, JAPAN--The Swedish group ASEA (with turnover of 25 billion francs) will start up production of about 100 manually controlled robots at its Persan-Beaumont plant in June 1983. The leading European robot builder, ranked third in the world, ASEA will also set up a robotics plant in Kobe, Japan, in a few months. The goal of the group's management is to acquire 20 percent of the world market to check the growth of American firms (Westinghouse, General Electric, and even IBM) and of Japanese companies (Kawasaki, Fujitsu-Fanuc, and Hitachi). "In the long run, we are precluding the possibility of purchasing a French enterprise," Gilles Breguet, president of ASEA's French branch, noted. [Text] [Paris LE NOUVEL ECONOMISTE in French 14 Feb 83 p 6] 2662

GOOD YEAR FOR SAAB-SCANIA--Turnover at the automotive division of the SAAB-SCANIA group increased by 32 percent in 1982 and "achieved good results," SAAB France S. A. announced on 9 March 1983. The SCANIA group (producing automobiles, aircraft, and miscellaneous products) increased its turnover by 16 percent and its profits by 18.3 percent (471 million Swedish kronor, or an equivalent amount in French francs). Exports, which increased by 17 percent, represented 57 percent of turnover. Despite a slight dip in SCANIA's sales volume, the heavy products division of the group maintained its profits. SCANIA consolidated its share of the market in most of the countries of Western Europe and South America. In France where SCANIA's direct marketing began in March 1982, its sales increased to 400 cars of which 284 had gas turbine engines. A new generation of automobiles is expected and a new turbine engine will be exhibited at the Geneva Auto Show. A 565 million kronor increase in capital will be proposed for the group at its general stockholders' meeting on 20 April 1983. [Text] [Paris AUTO-INDUSTRIES in French 9 Mar 83 p 7] 2662

PLASMA COAL GASIFICATION--Plasma applications are proliferating. The city of Goteborg (Sweden) could be supplied with energy thanks to an original coal gasification process. The fuel is transformed by a plasma, that is, a gas jet ionized by a powerful electric arc. More flexible than competing processes, this plasma energy process can be modulated. Several generators of from 1 to 10 megawatts hooked up in series make it possible to increase capacity. The SKF company, which originated the process, is a plasma specialist. Through this technology, since 1981 it has already produced iron sponges through direct ore reduction. And, in a year, already it will

regenerate 36,000 tons of heavy metals by processing 70,000 tons of foundry and steel works dust. This proves that plasma technology is a technology of the future. In France, Aerospatiale has perfected a 20 megawatt "plasma torch", unique in Europe, to test heat-resistant materials for rockets. [Text] [Paris LE NOUVEL ECONOMISTE in French: 14 Mar 83 p 16] 2662

EEC AGAINST MACHINE TOOL PLAN--It was learned from the Commission in Brussels that the European Commission has decided to open infraction proceedings against a portion of the aid planned by the French machine tool plan. They go on to say that the French government has a period of two months to present its observations but cannot grant any of the aid in question without the prior authorization of the European Commission. This is direct aid to machine tool producers in the form of capital contributions by the government within the context of company contracts that are considered by the Commission as likely to hinder competition and, consequently, to be incompatible with the rules of the Common Market. The Commission considers that the company contracts that stipulate participatory loans from the government allow the firms involved to refinance under more favorable conditions than on the capital market. The Commission adds that it has obtained from the French government neither sufficient information on the modalities and terms of this aid nor the justifications that would allow it to decide whether this aid is eligible for derogatory provisions stipulated in article 92, paragraph 3 of the Treaty of Rome. [Text] [Paris ELECTRONIQUE ACTUALITIES in French 18 Feb 83] 9969

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TRANSPORTATION

BAD TIMES SEE OBSERVERS STILL SPECULATING ON A-320 LAUNCH

Paris LE NOUVEL ECONOMISTE in French 7 Feb 83 pp 54-55

[Article by Philippe Gazier: "Civil Aeronautics Sector Goes Into Crisis"]

[Excerpts] This time, there can be no doubt of it: The civil aeronautics industry has gone into crisis. From Toulouse to Seattle, there is an awareness of having lived through the past 5 years in an isolated environment of growth and record investments. As of now, the sector "will be ceasing to have a life to itself," in the words of Gen Jacques Mitterrand, CEO [chief executive officer] of AEROSPATIALE [National Industrial Aerospace Company] and president of GIFAS [French Aeronautical and Space Industries Group] (116,000 employees in 160 companies and a consolidated total annual turnover of the order of 50 billion francs in 1982, 60 percent of which was exports). The brother of the president of the Republic has furthermore now set forth his concerns in this regard in a letter to the governmental authorities.

Everything seems to be converging at this point: A collapse of the commercial airlines market, an austerity policy that impacts the defense budgets of France and of a goodly number of other European countries, and a fall-off of European cooperation.

Of all these difficulties, the deadliest is clearly the world crisis in civil air transportation. Traffic growth has slowed substantially and the profit and loss results of the airlines are frankly abominable: The 120 member airlines of IATA [International Air Transportation Association] totaled a 1982 operating deficit of more than \$2 billion and a gross net, taken as a whole, of zero profits plowed back.

Should the Airbus Industrie consortium cut back its production rate growth? All planning heretofore has been based on a production rate of six Airbuses per month beginning around the end of 1983. It seems more reasonable today to lower the cross-bar of this goal, and no one any longer deems it realistic to think in terms of the heretofore planned rate of eight planes per month for 1984. Even more serious is the fact that, as of now, Airbus is producing more planes than it sells. Of the 283 planes that will have been built by the end of 1983, 21 remain to be sold. "The important thing is to preserve maximum flexibility to be able to change from one type of plane to another," reply the heads of Airbus Industrie and AEROSPATIALE, who are also pressing for a rapid broadening of the product line.

All Production Rates Declining

<u>Model Plane</u>	<u>1982 Orders</u>	<u>Total Orders</u>	<u>1982 Deliveries</u>	<u>Remaining to be Delivered</u>
<u>Wide Bodies:</u>				
Boeing 747	14	595	26	29
Douglas DC 10 ⁽¹⁾	12	411	11	44
Lockheed 1011	0	244	16	6
Airbus A 300	3	248	46	44
Airbus A 310	14	102	0	102
Boeing 767	4	177	20	157
<u>Narrow Bodies:</u>				
Boeing 707 ⁽²⁾	5	967	8	18
Boeing 757	2	123	2	121
Boeing 727	11	1820	26	18
Boeing 737	72	1052	95	134
Douglas DC 9	84	1162	44	85
Fokker F 28	23	216	9	20
Fokker F 27	12	742	14	11

(1) Including U. S. Air Force KC 10 refuelers.

(2) Including AWACS radar planes.

In this regard, things seem to have progressed at Airbus: The engine intended for the 150-passenger plane (A-320) has finally stopped being "unattainable." The "dash 4" version of the CFM 56, built jointly by General Electric and SNECMA [National Aircraft Engine Study and Manufacturing Company] could prove viable. According to Mr Jacques Benichou, CEO of SNECMA, "It would yield an economy of the order of 15 to 20 percent over the jet engine of the family previously contemplated for the A-320."

"The conditions favoring a decision to launch [the A-320] could be attained by the beginning of this summer," estimates Gen Jacques Mitterrand--that is, around the time of the Bourget Show (a quite exceptional event this year, since American President Ronald Reagan, who will be in France at the time to celebrate the Air and Space Bicentennial, will undoubtedly be among its visitors). Six months must still elapse to know whether or not the Europeans will venture into this new program.

But let there be no illusions: A decision by the Airbus Industrie partners to build the A-320 will not bring about an overnight major increase in the industry workload. Like Boeing, the European aircraft builders fully expect to have to endure at least 2 very difficult years.

9238

CSO: 3698/251

TRANSPORTATION

AIRBUS ATTEMPTS TO PENETRATE JAPANESE MARKET

Paris LE MONDE in French 10 Mar 83 p 35

[Article by R.-P. Paringaux: "Airbus Industrie Tackles Japanese Market"]

[Text] Tokyo--The competition is intensifying between Boeing and Airbus Industrie for the Asiatic air transportation market, and especially the Japanese market, a prestigious and lucrative one that has been virtually monopolized for several decenniums by the American builders. In early March, less than 15 days after the presentation of the Boeing-767 to the Japanese, the Airbus Industrie team, headed by its general manager, Bernard Lathiere, stopped over in Tokyo, its next to last stop before South Korea on a long A-310 promotion tour that began in the Near East.

The European plane was put through a number of demonstration flights for the officials and engineers of JAL [Japan Airlines]. Mr Lathiere took the opportunity to set things right, denouncing the allegedly tendentious campaign by the promoters of the Boeing-767, who are implying that the A-310 is inferior to its rival as regards range and fuel economy. Airbus Industrie's general manager affirmed the contrary and brought out the various advantages that, in his view, characterize the European plane.

Be that as it may, both planes appear to be rather similar in design and price. It will be up to the engineers and, eventually, the politicians to decide between them. During his visit, Mr Lathiere was received especially by the prime minister, Mr Nakasone. For the first time, it would seem, the Jal management was given the political green light to negotiate directly with Airbus Industrie.

According to the Japanese press, the Americans are said to have complained (unofficially) about what they considered favorable treatment being accorded their European competitors.

The Japanese hurdle is a particularly important one for the Europeans. The fact is that, despite the success of the A-300 with Asiatic airlines, the Europeans have had precious little success in their efforts to overcome the American monopoly of the Japanese market. True, the Japanese airline TDA [Toa Domestic Airlines] have ordered nine Airbus A-300's, seven of which have

already been put into service, but this is at best a very minor penetration, considering the density of the Japanese air network. For ANA All Nippon Airways, a private domestic airline, the cards have been played and 25 Boeing-767's have been ordered. This choice is in no way a surprising one: Three big firms (Mitsubishi, Kawasaki and Fuji Industries) were associated, to the extent of 15 percent, in the design and production of the Boeing-767.

There remains JAL, which must replace some 20 DC-8's before 1986, and which, owing to its semi-public status, is less bound by political considerations than its private competitors.

Nothing has been won as yet, and, behind the scenes, the game of political arm wrestling continues. In effect, aside from the fact that Japan was involved in the building of the 767, no one can ignore the political, economic and military clout Washington wields in Japan's affairs, nor the art with which the Americans play the game.

The battle extends beyond this single duel, and also through it, to the Asian air transportation market as a whole--a region where, in its class, the A-300 was virtually a lone horseman until the arrival of the 767, with 80 planes sold to 12 airlines. But not a single order for an A-310 has materialized in Asia, where Boeing has already sold 30 of its 767's.

Another major source of worry for the Europeans is the indecision on the part of the Thai International Airline, the first and largest Asiatic user of Airbus, which last year showed interest in the Boeing 767, following delays in the delivery of two Airbus A 300-600's it had ordered.

Added to the difficulties of penetrating the Japanese market, a return by Thai to the Boeing camp for medium-range airliners risks having a domino effect that would be very detrimental to the prestige and future Airbus positions in Asia. The European camp is going all out to prevent this, and there too, the game has not yet been played.

Successes and failures will weigh all the more heavily on the order book over the next few years, in that, throughout the current almost general business slump, the Asiatic air transportation sector has been performing quite well.

9238

CSO: 3698/251

TRANSPORTATION

INDUSTRIAL TECHNOLOGY 'SACILOR' STEEL COMPANY OPERATING CONTRACT SIGNED

Paris AUTO-INDUSTRIES in French 24 Feb 83 pp 3-4

[Text] The "Sacilor" operating contract for 1983-1986, signed on February 23, foresees overall appropriations of 815 billion francs (82 value) for investment expenditures.

The group's recovery plan, aiming to reestablish the operational balance by 1986, will be financed through government aid, according to the statement published on this occasion. For 1983, "Sacilor" will receive a contribution of specific funds in the amount of 3.5 billion francs.

In order to increase its competitiveness and regain their financial balance, the group will modernize its iron and steel industrial tools. It will also increase its participation in areas supporting iron and steel, the statement recalled. This development will take place mainly in the early processing area. In all, two hundred million francs will be allocated to these operations.

Moreover, the iron and steel group will develop its research effort at the rate of at least 7 percent per year. The 1983 budget will be 197 million francs of development research expenditures.

On the subject of partnership, "Sacilor" will pursue the already ongoing discussion for a partnership agreement for progress and division of responsibilities. The group will also grant reduced working time and will apply minimum age requirements: "A specific agreement on personnel changes will be the subject matter of a negotiation between partners," the statement also said.

Furthermore, it will undertake training efforts with the main objectives being: adaptation of personnel to technical developments, higher work promotions and the inclusion of new young workers.

"At sites affected by employment reductions, "Sacilor" will try to create the largest possible number of stable jobs in other areas of activity in order to maintain a regional socio-economic balance," the statement also indicated. For this purpose, an appropriation of 250 million francs is planned for the operating contract period. "It shall take advantage of local and regional firms to the maximum through reconversion partnerships." "Solodev" is the first of these, indicated the group, and it has been operational since the beginning of 1983.

TRANSPORTATION

BRIEFS

JOINT PEUGEOT-FIAT ENGINE--Mr Emile Courtel, director of the "Peugeot" production center in Sochaux, revealed during the launching of the new "205" that the "small engine (designed jointly by "Peugeot" and "Fiat") will soon be produced at Sochaux." This engine, which "Fiat," on its part, will produce in Italy, would have a piston displacement of less than 900 cubic meters, and in 2 or 3 years it is expected to be equipped on a new "Peugeot" small car model. In Italy, the same engine will be assembled on a specifically "Fiat" model. The announcement that the "small engine" will be manufactured at Sochaux has reassured certain inhabitants of Sochaux, who feared seeing their factory turn into a simple assembly shop. The "205" will be built at the "Peugeot" factory in Mulhouse. [Text] [Paris AUTO-INDUSTRIES in French 28 Feb 83 p 1] 12204

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